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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/839,044	04/20/2001	Katherine H. Cornog	A01004	3631

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EXAMINER

MILLER, RYAN J

ART UNIT	PAPER NUMBER
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2621

DATE MAILED: 04/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/839,044

Applicant(s)

CORNOG ET AL.

Examiner

Ryan J. Miller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because a) reference characters "230" in Fig. 2 and "220" on page 4 of the specification have both been used to designate a blended image and b) reference characters "232" in Fig. 2 and "222" on page 4 of the specification have both been used to designate a blended image. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: The examiner requests that the applicant update the status of application serial no. 09/657,699 mentioned on page 4, line 15 of the specification. The examiner also requests that the applicant provide the application serial numbers of the two applications mentioned on page 4, lines 16-18 of the specification.

Appropriate correction is required.

Claim Objections

3. The following quotations of 37 CFR § 1.75(a) and (d)(1) are the basis of objection:

(a) The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

(d)(1) The claim or claims must conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description. (See § 1.58(a)).

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4. Claims 1-14 are objected to under 37 CFR § 1.75(a) as failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention or discovery.

Regarding claims 1 and 8, these claims require “generating a single channel image”. However, it is unclear, even in light of the specification, how this “single channel image” is different than a regular image. Is this “single channel image” merely an image produced based on the processing steps provided in the claim? For examination purposes, this limitation will be interpreted as “generating an image”. Appropriate clarification is required.

Regarding claim 5, this claim recites the limitation “the first image” at line 2 and the limitation “the second image” at line 3. There is insufficient antecedent basis for these limitations in the claim.

Claims 10 and 14 are objected to for requiring the same limitation. The examiner suggests changing claim 14 to depend from claim 11 instead of claim 8.

Claims 2-4, 6, 7, 9, and 11-13 are objected to as depending from objected to claims.

5. Claims 5-7 and 12 are objected to under 37 CFR § 1.75(d)(1) as failing to find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

Regarding claims 5 and 12, these claims call for the limitation “using the estimate of motion to generate several images from the first image to the second image”. However, it is not clear where this limitation is described in the specification. The specification describes that the motion estimate can be used for such post-processing operations as warping, morphing, motion blurring, stabilization, image sharpening, or mosaic generation on page 4, lines 11-14. The

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specification does not describe generating several images from the first to the second image using the estimate of motion. Clarification of this feature is required.

Claims 6 and 7 are objected to as depending from an objected to claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 2, 4-6, 8, 9, 11-13, 15, and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Go (U.S. Patent No. 6,477,279 B2).

As applied to claim 1, Go discloses a method for analyzing motion between two images, comprising: generating a single channel image for each of two input images according to a function that measures, for each pixel, occurrence of a desired characteristic, other than luminance alone, in the input images at each pixel location to provide a value for an output pixel in the single channel image from a range of values (see Fig. 13 and column 7, lines 4-32: The reference describes generating a pair of edge images, Sv and Sh, (i.e. a single channel image) from input images X₀ and X₁ using edge detectors 21-1 and 21-2. The edge detectors detect variations of the rate of change of pixel values from pixel to pixel in the input images using the functions described at lines 15 and 20 of column 7 (i.e. a function that measures, for each pixel, occurrence of a desired characteristic, other than luminance alone, in the input images at each pixel). The desired characteristic is the edge sharpness at each pixel also referred to as the edge

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size. These values provide a value for the output pixel in Sv and Sh (i.e. single channel images) and have a range of values.); and computing an estimate of motion of the desired characteristic between the two images using the single channel images generated for the two input images (see Fig. 13 and column 17, lines 6-19: The reference describes a motion estimator that uses the generated edge images Sh and Sv (i.e. using the single channel images generated for the two input images) to compute edge motion vectors (i.e. an estimate of motion of the desired characteristic between the two images).).

As applied to claim 2, Go discloses that the desired characteristic is edge magnitude (see column 7, lines 29-32: The reference describes that the desired characteristic is the edge sharpness at each pixel also referred to as the edge size.).

As applied to claim 4, Go discloses processing the input images according to the estimate of motion (see column 17, lines 30-33: The reference describes that a multiplexer multiplexes the edge difference information and the motion information to obtain an encoded image. The edge difference information is obtained from the input images, therefore a processed version of the input images (i.e. the edge difference information) is further processed according to the motion information to obtain an encoded image.).

As applied to claim 5, Go discloses using the estimate of motion to generate several images from the first image to the second image (see column 17, lines 11-13: The reference describes that the motion estimator outputs a pair of edge difference images from the processed input images (i.e. several images).).

As applied to claim 6, Go discloses that the desired characteristic is edge magnitude (see the rejection of claim 2 above).

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As applied to claims 8, 9, and 11-13, which merely call for an apparatus for performing the method of claims 1, 2, and 4-6, Go discloses such an apparatus as can be seen in Fig. 13 of the reference.

As applied to claim 15, Go discloses a method for image processing, comprising: computing an estimate of motion between the two images according to a constant edge constraint (see column 17, lines 6-19: The reference describes that the motion estimator 66 computes edge motion vectors M_s and difference edge images D_h and D_v (i.e. an estimate of motion) between two input images S_h and S_v using a previous horizontal edge image and a previous vertical edge image S_p (i.e. a constant edge constraint); and processing the input images according to the estimate of motion (see column 17, lines 20-21: The reference describes that the difference edge images D_h and D_v are processed by difference encoder 69 to produce edge difference information. This edge difference information is then used to process the input images to obtain an encoded image C.).

As applied to claim 16, which merely calls for an apparatus for performing the method of claim 15, Go discloses such an apparatus as can be seen in Fig. 13 of the reference.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 3, 7, 10, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Go (U.S. Patent No. 6,477,279 B2) and Kobilansky (U.S. Patent Application

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Publication No: US 2002/0159749 A1). The arguments as to the relevance of Go in the rejection of claims 1, 4, 5, and 8 above are incorporated herein.

Claim 7, which is representative of claim 3, calls for the desired characteristic to be proximity to a color. The use a motion estimator based on the proximity to a color is absent from Go. However, Kobilansky, in the same field of endeavor of image processing and the same problem solving area of motion estimation, discloses a motion estimation technique that takes into account the proximity to a color (see paragraph [0015]: The reference describes that a region in the target frame should have a color close (i.e. proximity to a color) to the same region in the reference frame.).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Go by having the desired characteristic as proximity to a color as taught in Kobilansky because the use of such a desired characteristic "provides enhancements to the process of estimating motion in image-sequences such as those that originate from motion pictures or television video" (see Kobilansky: paragraph [0004]).

As applied to claims 10 and 14, which merely call for an apparatus for performing the method of claims 3 and 7, the combination of Go and Kobilansky disclose such an apparatus as can be seen in Fig. 13 of Go.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Cornog et al. (U.S. Patent No. 6,665,450 B1) is pertinent in that the reference discloses a system that computes a set of motion vectors between the first and second images and then processes the images.

Bouthemy (the article titled "A Maximum Likelihood Framework for Determining Moving Edges") is pertinent in that the reference describes a method of motion estimation based on edge information.

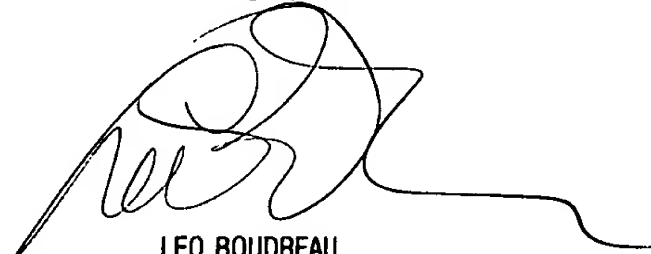
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan J. Miller whose telephone number is (703) 306-4142. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H. Boudreau can be reached on (703) 305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Ryan J. Miller

Ryan J. Miller
Examiner
Art Unit 2621


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